# PATENT ABSTRACTS OF JAPAN

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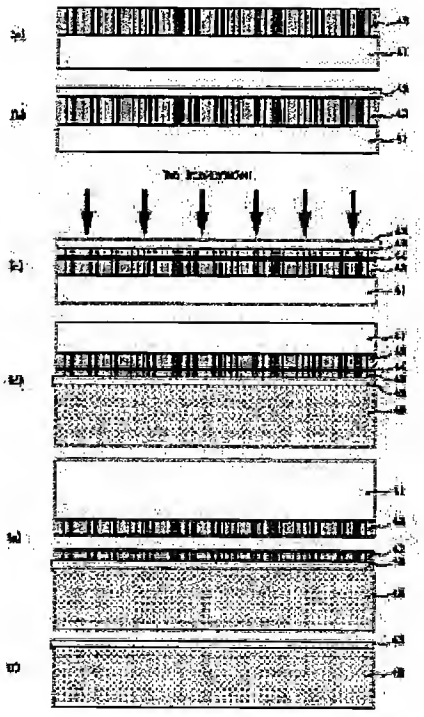
## (54) SEMICONDUCTOR BASIC MATERIAL AND PRODUCTION THEREOF

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a method for producing a flat SOT basic material having sufficient quality with high reproducibility while saving the resource and realizing cost reduction by reusing the material.

SOLUTION: The method for producing a semiconductor basic material comprises a step for making porous an Si basic material and to form a porous Si layer 42 at least on the surface thereof, and a step for forming a porous Si layer 44 having high porosity in the porous Si layer 42. The step for forming a high porosity layer can be carried out by injecting ions into a porous Si layer at a specified projection range, or varying the current density at the time of anodic formation during the step for forming a high porosity layer. In this regard, a nonporous single crystal Si layer 43 is grown epitaxially on the porous Si layer 42. Subsequently, the surface of porous Si layer 42 is pasted to a supporting basic body 45 and separated through a porous Si layer 44 having high porosity. Finally, the porous Si layer 42 is removed by selective etching.



* NOTICES *



1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

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## CLAIMS

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[Claim(s)]
[Claim 1]A manufacturing method of a semiconductor base substance characterized by comprising the following.
A Si base is porosity-ized and it is a porosity chemically-modified [ of said Si base / which forms a porous Si layer in the surface at least ] degree.
A high porosity layer formation process which forms a porous Si layer with large porosity in a field of the fixed depth from said porosity into said porous Si layer.

[Claim 2]A manufacturing method of the semiconductor base substance according to claim 1 in which a high porosity layer formation process is performed by an ion implantation process which pours ion into said porous Si layer with a fixed projection range.
[Claim 3]A manufacturing method of the semiconductor base substance according to claim 2 which has the nonvesicular stratification process of forming a nonvesicular layer in the surface of said porous Si layer, before said ion implantation process.
[Claim 4]A manufacturing method of the semiconductor base substance according to claim 2 or 3 in which said ion consists of at least one sort in rare gas, hydrogen, and nitrogen.
[Claim 5]A manufacturing method of the semiconductor base substance according to claim 3 characterized by comprising the following.
A lamination process of pasting a support base together on the surface of said nonvesicular layer after said high porosity layer formation process.
A partition process which separates said Si base by a porous Si layer with said large porosity after said lamination process two.

[Claim 6]A manufacturing method of the semiconductor base substance according to claim 5 performed when said partition process heat-treats said Si base.
[Claim 7]A manufacturing method of the semiconductor base substance according to claim 5 performed when said partition process pressurizes said Si base in the direction vertical to the surface.
[Claim 8]A manufacturing method of the semiconductor base substance according to claim 5 performed when said partition process pulls said Si base in the direction vertical to the surface.
[Claim 9]A manufacturing method of the semiconductor base substance according to claim 3 performed when said partition process applies shearing stress to said Si base.
[Claim 10]A manufacturing method of the semiconductor base substance according to claim 3 in which said nonvesicular layer consists of single crystal Si.
[Claim 11]A manufacturing method of the semiconductor base substance according to claim 3 which consists of single crystal Si which has an oxidation Si layer in the surface which pastes said nonvesicular layer together.
[Claim 12]A manufacturing method of the semiconductor base substance according to claim 3 in

which said nonvesicular layer is a single crystal compound semiconductor.
[Claim 13]A manufacturing method of the semiconductor base substance according to claim 5 in which said support base is a Si base.
[Claim 14]A manufacturing method of the semiconductor base substance according to claim 5 which is a Si base which has an oxidation Si layer in the surface which said support base pastes together.
[Claim 15]A manufacturing method of the semiconductor base substance according to claim 5 in which said support base is a light transmittance state base substance.
[Claim 16]A manufacturing method of the semiconductor base substance according to claim 5 in which said lamination process is performed combining anode joining, application of pressure, heat treatment, or these.
[Claim 17]A manufacturing method of the semiconductor base substance according to claim 5 which has a porosity Si removal process which removes a porous Si layer exposed to the surface of said support base, and exposes said nonvesicular layer after said partition process.
[Claim 18]Said porosity Si removal process to fluoric acid and fluoric acid Mixed liquor of alcohol or hydrogen peroxide solution which added either at least, A manufacturing method of the semiconductor base substance according to claim 17 which uses for buffered fluoric acid and buffered fluoric acid mixed liquor of alcohol or hydrogen peroxide solution which added either at least, and ********, and is performed by unelectrolyzed wet etching.
[Claim 19]A manufacturing method of the semiconductor base substance according to claim 17 which has flattening down stream processing which carries out surface flattening processing of said nonvesicular layer following said porosity Si removal process.
[Claim 20]A manufacturing method of the semiconductor base substance according to claim 19 performed by heat treatment in atmosphere in which said flattening down stream processing contains hydrogen.
[Claim 21]A manufacturing method of the semiconductor base substance according to claim 5 which a porosity chemically-modified [ said / said ] degree forms a porous Si layer in both sides of said Si base, and said lamination process pastes together to a porous Si layer which has said support base in both sides of said Si base in those with two sheet, and said support base of two sheets.
[Claim 22]The semiconductor according to claim 5 which has the ON process of being characterized by comprising the following.
[Claim 22]. . 2nd non-** that forms a nonvesicular layer again after said partition process on the surface of a porous Si layer exposed to the surface of said Si base
The 2nd which pours ion into said porous Si layer with a fixed projection range, and forms a porous Si layer with large porosity of said porous Si layer after a stratification process and said nonvesicular stratification process.

[Claim 23]A manufacturing method of the semiconductor base substance according to claim 1 in which a porosity chemically-modified [ said ] degree is performed by anodization.
[Claim 24]A manufacturing method of the semiconductor base substance according to claim 23 in which said anodization is performed with the inside of an HF solution, or mixed liquor of an HF solution and alcohol.
[Claim 25]A manufacturing method of the semiconductor base substance according to claim 1 performed when said high porosity layer formation process changes current density of anodization between porosity chemically-modified [ said ] degrees.
[Claim 26]A semiconductor base substance, wherein a porous Si layer is shown in a surface layer of a Si base and a porous Si layer with large porosity is in a field of the fixed depth from the surface of said porous Si layer in said porous Si layer.
[Claim 27]The semiconductor base substance according to claim 26 which nonvesicular Si is shown in the surface of said porous Si layer, forms an electrode in the surface of said Si base and said nonvesicular Si layer, respectively, and serves as a light emitting device.

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[Translation done.]